

Holographic Reticle and Patterning Method

ABSTRACT OF THE DISCLOSURE

A hologram reticle and method of patterning a target. A layout pattern for an image to be transferred to a target is converted into a holographic representation of the image. A hologram reticle is manufactured that includes the holographic representation. The hologram reticle is then used to pattern the target. Three-dimensional patterns may be formed in a photoresist layer of the target in a single patterning step. These three-dimensional patterns may be filled to form three-dimensional structures. The holographic representation of the image may also be transferred to a top photoresist layer of a top surface imaging (TSI) semiconductor device, either directly or using the hologram reticle. The top photoresist layer may then be used to pattern an underlying photoresist layer with the image. The lower photoresist layer is used to pattern a material layer of the device.